

Notice of Allowability

Application No.

10/627,430

Examiner

Henry S. Hu

Applicant(s)

KASPAR ET AL.

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to November 9, 2004.
2. ☒ The allowed claim(s) is/are 1-15.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

1. Applicants' amendment filed on November 9, 2004 was received. Claims 3 and 12 were amended, and new Claim 15 was added. To be more specific, Claim 3 was amended to the use of "up to", while Claim 12 was amended only to correct the wrong names of "amounts". With respect to specification objections, the Applicants have corrected all informalities as suggested by the examiner, particularly the improper language of "APFOA" to "APFO". In view of above amendment, the specification objections and claim objection of office action dated 8-9-2004 are now removed. **Claims 1-15 are pending now.**

2. Claim rejections under 35 USC 102 and 103 in the previous Office Action dated August 9, 2004 are now removed for the reasons given in paragraphs 3-9 thereafter.

Allowable Subject Matter

3. Claims 1-15 are allowed.

4. The following is an examiner's statement of reasons for allowance: The above claims 1-15 are allowed over the closest references:

Art Unit: 1713

5. The limitation of **parent Claim 1** of present invention relates to *fluoropolymer suitable for the preparation of a fluoroelastomer, said fluoropolymer comprising (a) 10-50 mole% of TFE, (b) 15-40 mole% of HFP, (c) 25-59 mole% of VDF, (d) 1-20 mole% of CTFE, and optionally (e) one or more fluorinated monomers other than above. Other parent Claim 15 relates a fluoroelastomer with the same composition of tetrapolymer of Claim 1 and has a lower flexural modulus than corresponding terpolymers when CTFE is not included. See other limitations of dependent Claims 2-14.*

6. In view of the above-mentioned amendment, parent composition **Claims 1 and 15** of present invention still carry the same original limitation as a fluoropolymer comprising **(a) 10-50 mole% of TFE, (b) 15-40 mole% of HFP, (c) 25-59 mole% of VDF, (d) 1-20 mole% of CTFE** with each monomer is as specified in the molar amount.

With respect to parent **Claim 1** in **102 rejection** for Claims 1-3 and 5-11, the reference **Wlassics** only discloses the preparation of various copolymers including repeating units of VDF, TFE and at least one fluorinated monomer selected from HFP, perfluorobutene, trifluoroethylene, CTFE, PAVE and the like (column 3, line 9-35). As pointed out by the Applicants, by including both HFP and CTFE at the same time as well as using the claimed amount, one having ordinary skill in the art would have to engage in undue experimentation to arrive at the specific invention as claimed in Claims 1 and 15. Additionally, the Applicants have presented unique advantages to include both HFP and CTFE in claimed amounts with TFE

Art Unit: 1713

and VDF in several respects as disclosed on page 11 of Remarks. In fact, a research is needed to reach the claimed tetrapolymers since such a type of polymers is not usual.

With respect to parent **Claim 1** in **102 rejection** for Claims 1-3, the reference **Schlueter** does not disclose a tetrapolymer from all of VDF, HFP, TFE and CTFE. Although some **fluoroelastomeric tetrapolymers** such as VITON GF, VITON-GH, VITON-E45 and VITON-B50 useful in the electrostatographic or electrophotographic fields are mentioned on column 4 at line 35-43, such VITONs comprise only "bromine-containing monomers" useful as cure-site function according to the specific disclosure of USPG-PUB 2002/0132074 A1 to Gervasi et al., see paragraph 0016 at lines 1-12). Schlueter has disclosed that perfluoroelastomers may include repeating units from chlorotrifluoroethylene and the like to be used as the cure site monomer (column 5, line 40-46). However, CTFE monomer is only one of the many options shown on column 5, line 40-64 as the Applicants pointed out on page 12 of Remarks. The key point is that current limitation of Claims 1 and 15 relate to a fluoroelastomeric tetrapolymer, not a perfluoroelastomeric tetrapolymer since the monomer (c) vinylidene fluoride at 25-59 mole% is required. It should be noted that the behavior of hydrogen-containing fluoroelastomer is somewhat different from perfluoroelastomer. Again, a research is needed to reach the claimed tetrapolymers since such a type of polymers is not usual. As pointed out by the Applicants, by specifically including CTFE as well as using the claimed amount, one having ordinary skill in the art would have to engage in undue experimentation to arrive at the specific invention as claimed in Claims 1 and 15. Finally, the examiner has recognized that the Applicants have provided unique advantages to include

Art Unit: 1713

CTFE in claimed amounts with TFE, HFP and VDF in several respects as disclosed on **page 3 at lines 5-33 of specification.**

7. In a close examination on **103 rejection** for dependent **Claims 4 and 12-14**, a new prior art is needed to fix the deficiency from either Wlassics or Schlueter for their parent Claims 1 and 15. The secondary reference **McCarthy** only discloses that in the course of polymerization, surfactant is only added after the primary particles have already created or no surfactant is added at all, polymers having bimodal distribution can be obtained with the advantage as such obtained specific polymers may contain a little or no surfactant with controllable particle number, size and distribution.

Additionally, the present invention has shown in examples along with some comparative examples for unexpected results in obtaining the claimed tetrapolymer of VDF/HFP/TFE/CTFE (see pages 16-19 for **examples 1-4 along with its control example 1, and Tables 1-2**).

Therefore, all the above-mentioned references, in combination or alone, does not teach or fairly suggest limitations of present invention.

8. After further examination and search, the examiner found the following prior art did not teach the claimed limitation:

USPG-PUB No. 2002/0111417 A1 to Kirochko et al. only discloses that some **tetrapolymers** may have repeating units which are selected from TFE, HFP, VDF, CTFE and

Art Unit: 1713

the like (see Claims 11, 12 and 13). Only the general concepts are provided, no working examples at all. Therefore, **a research is needed** in order to reach the claimed tetrapolymer of VDF/HFP/TFE/CTFE. Therefore, Kirochko fails to teach or fairly suggest the limitation of present invention.

US Patent No. 5,548,930 to Gentle et al. only discloses that some **tetrapolymers** may have "**exact**" **four repeating units from TFE, HFP, VDF, and CTFE** (column 2, line 42-47; column 17, line 67 – column 18, line 1; column 18, line 65-66). However, only the general concepts are provided, no ratio of monomers and no working examples are mentioned at all. Therefore, Gentle fails to teach or fairly suggest the limitation of present invention.

9. The two key issues, the limitation on "tetrapolymer of VDF/HFP/TFE/CTFE" with "the claimed amount on monomers", cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

10. As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the above references to render the present invention anticipated or obvious to one of the ordinary skill in the art. Therefore, the two independent and parent **Claims 1 and 15** are allowed for the reason listed above. Since the prior art of record fails to teach the present invention, the remaining pending dependent **Claims 2-14** are passed to issue.

Art Unit: 1713


11. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

12. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is (571) 272-1103. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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December 22, 2004


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